

DYNAMIC EDUCATIONAL COLLABORATION BETWEEN UNIVERSITY AND HIGH SCHOOL FACULTY PROMOTING PARTNERSHIP IN TEACHING AND LEARNING IN THE 21ST CENTURY

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ABSTRACT

A dynamic partnership has been developed and cultivated between the North Carolina Central University (NCCU) and Durham Public Schools (DPS) called "The Learning Laboratory Initiative Partnership". The faculties involved in the partnership are from North Carolina Central University and Durham Public Schools Hillside New Tech High School. The overall purpose of the collaborative partnership between NCCU and Hillside New Tech High is to have a positive impact on 9–12 students' performance in science, mathematics, engineering, and technology (the STEM areas) by using current and emerging technologies, Instructional Design, the TPACK integration model, and a content faculty mentoring system. The partnership focuses on an intensive program of professional development and content mentoring of 9–12 teachers at Hillside New Tech. This project is divided into two phases based on the fiscal calendar. This research paper provides an overview of the project as a best practice model of technology integration and university–school partnership. It discusses the components of the project and provides a demonstration of professional development activities and teacher products as a result of the training provided by NCCU faculty for Hillside NT teachers.

Keywords: Emerging Technologies, Instructional Design, TPACK.

INTRODUCTION

The ever changing face of technology in education, the steep learning curves of some technologies, the complexities of teaching with technology, engaging students in the learning process, and technology standards require that teacher education programs and educational systems prepare teachers to understand the relationship between technology knowledge (TK), content knowledge (CK), and pedagogical knowledge (PK) in the technological pedagogical content knowledge (TPACK) model (Hofer & Harris, 2010; Mishra, Koehler & Henriksen, 2011). Studies show that teacher education programs do not adequately prepare preservice teachers with the knowledge and experiences needed to effectively integrate technology in their classrooms (Bull, 2009; Milken Exchange on Education Technology, 1998). The need for instructional technology courses is important in preparing pre–service and in–service teachers from diverse cultural settings to understand, plan for, and integrate technology in their teaching (Figg & Jaipal, 2009; Koehler & Mishra,

2005). However, teaching technology knowledge, content knowledge and pedagogical knowledge as separate entities do not guarantee adequate preparation of teachers to develop rich and in–depth experiences that would enrich their knowledge of integrating technology in their teaching.

The Basic Linear Model of Instructional Design also called the "ADDIE Model"

Instructional Design (also called Instructional Systems Design [ISD]) according to the ID2 Research Group is "the practice of creating instructional experiences which make the acquisition of knowledge and skill more efficient, effective, and appealing" (Merrill, M. D., Drake, L., Lacy, M. J., Pratt, J., & ID2 Research Group, 1996). The ADDIE model is a systematic instructional design model consisting of five phases: (i) Analysis, (i) Design, (iii) Development, (iv) Implementation, and (v) Evaluation. Various flavors and versions of the ADDIE model exist (Learning Theories Knowledgebase, 2012). The acronym "ADDIE" is a generic

term for the five-phase instructional design model consisting of the systemic use Analysis, Design, Development, Implementation, and Evaluation (which is comprised of Formative and Summative Evaluation) (Osler, 2010). Each step has an outcome that feeds into the next step in the sequence. There are probably over 100+ different variations of the generic ADDIE model (Learning Theories Knowledgebase, 2012). The originator of this particular ID model is unknown it has been refined by educational researchers and Instructional Designers Walter Dick and Lou Carey (1996) and other models of Instructional Design have developed their foundations in and from it [Figure 1]. Displays an illustration of the Basic Linear Model Instructional Design from the book "Visualus Visioneering Volumetrically: The Mathematics of the Innovative Problem-Solving Model of Inventive Instructional Design" (Osler, 2010).

A Description of the Five Phases of the Basic Linear Model of Instructional Design

Analysis Phase: During analysis, the designer identifies the learning problem, the goals and objectives, the audience's needs, existing knowledge, and any other relevant characteristics. Analysis also considers the learning environment, any constraints, the delivery options, and the timeline for the project.

Design Phase: A systematic process of specifying learning objectives. Detailed storyboards and prototypes are often made, and the look and feel, graphic design, user-interface and content is determined here.

Development Phase: The actual creation (production) of the content and learning materials based on the Design phase.

Implementation Phase: During implementation, the plan is put into action and a procedure for training the learner and teacher is developed. Materials are delivered or distributed to the student group. After delivery, the effectiveness of the training materials is evaluated.



Figure 1. The Basic Linear Model of Instructional Design (The ADDIE Model)

Evaluation Phase (Two Types Formative and Summative):

This phase consists of (i) Formative and (ii) Summative Evaluation. Formative Evaluation is present in each stage of the ADDIE process. Summative evaluation consists of tests designed for criterion-related referenced items and providing opportunities for feedback from the users. Revisions are made as necessary. Rapid prototyping (continual feedback) has sometimes been cited as a way to improve the generic ADDIE model (Learning Theories Knowledge base, 2012).

Technological Pedagogical Content Knowledge (TPACK)

The interplay of content knowledge, pedagogical knowledge, and technology knowledge in a technology or methods course or staff development training minimizes the struggles of in-service teachers (Hechter and Phye, 2010). According to Hechter and Phye (2010), it is important for teachers to understand and be aware of the TPACK model for effective technology integration in their classrooms. Hofer and Harris (2010) state that when "content-keyed learning activities paired with suggested technological tools and resources, the approach attempts scaffold the process in ways that will help teachers become more discerning about and confident with their technologically integrated planning." (p. 301). Technological Pedagogical Content Knowledge (TPACK) as a model has focused on helping teachers define technology integration model aligned with content learning activities, (Hofer and Harris, 2010; Albion, Jamison-Proctor, Finger, 2010; Ho and Albion, 2010.) Figure 1) Technological Pedagogical Content Knowledge

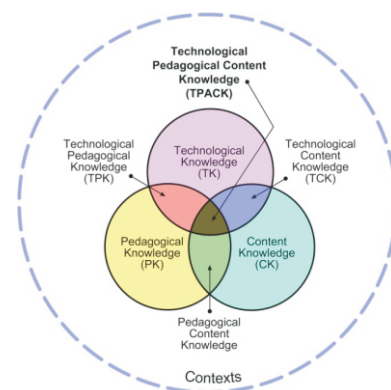


Figure 2. The Technological Pedagogical Content Knowledge (TPACK) Model

(TPACK). For effective integration, the TPACK model should be aligned with the International Society for Technology in Education National Educational Technology Standards for teachers, (ISTE: NETS–T, 2008).

As we prepare teachers to understand how to integrate twenty-first century technologies in their classrooms, technology should not be taught in isolation, but be aligned with content and pedagogical knowledge. Teacher education programs have the onus to ensure that TPACK integration takes place in a method's course or in technology-based courses. The TPACK model is supported by several theories. Two main theories aligned with TPACK in this partnership are the multiple intelligences theory as espoused by Gardner (1983) and the constructivist teaching approach. The triadic interplay of multiple intelligences, constructivist teaching and TPACK in this partnership will scaffold on the learning and teaching process, address different learning styles of students, utilize prior experiences of teachers and students, and foster higher level thinking skills of participants to create rich technology-based activities. (Figure 2) is an illustration of the Technological Pedagogical Content Knowledge (TPACK) Model.

TPACK Use in National Organizations

At national, state and local levels, standards for pedagogical, technology and content knowledge are now commonplace, especially for content areas, grade levels, and for initial and renewal licensure of teachers. North Carolina, like most states in the union and professional organizations such as ISTE (2008), NCATE (2000), the National Science Teacher Association (NSTA, 2012) (NSTA, 2003), the National Council for Social Studies Teachers (2012), the National Council of Teachers of Mathematics (2012), and the National Council of Teachers of English (NCTE) (2012) has established basic competency guidelines for teacher education programs to support TPACK framework. In this partnership, the ISTE NETS for teachers (2008) will be used as the student learning outcomes for all instructional technology courses. Below are excerpts of TPACK standards from the different content professional organizations that are addressed in this partnership:

Mathematics: The National Council of Teachers of Mathematics (NCTM, 2012)

Technology Knowledge: "Principle 6: "Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning."

Pedagogical Knowledge: "Principle 3: Teaching. Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well."

Content Knowledge: "Principle 4: Learning. Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge."

English/Language Arts: The National Council of Teachers of English (NCTE, 2012)

Technology Knowledge: "Standard 8: Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge."

Pedagogical Knowledge: "Standard 3: Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).

Content Knowledge: "Standard 1: Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.

Science: The National Science Teacher Association (NSTA, 2003)

Technology Knowledge: "Standard 5: General Skills of Teaching. Teachers of science successfully use technological tools, including but not limited to computer technology, to access resources, collect and process

data, and facilitate the learning of science.”

Pedagogical Knowledge: “*Standard 3: Inquiry.* Teachers of science engage students both in studies of various methods of scientific inquiry and in active learning through scientific inquiry. They encourage students, individually and collaboratively, to observe, ask questions, design inquiries, and collect and interpret data in order to develop concepts and relationships from empirical experiences.”
Science

Content Knowledge: Standard 1: Content. Teachers of science understand and can articulate the knowledge and practices of contemporary science. They can interrelate and interpret important concepts, ideas, and applications in their fields of licensure; and conduct scientific investigations.”

Implementation of the TPACK Model in the LLI Partnership

The student learning outcomes for the instructional technology staff development or courses will be aligned with the International Society for Technology in Education National Educational Technology Standards for teachers, (ISTE: NETS-T, 2008).

How the LLI Partnership addressed TPACK-Technological Knowledge. The technology knowledge in this partnership was addressed the following activities:

Participation in technology staff development activities (summer 2011) aligned with needs assessments administered in fall 2010.

The technology knowledge objectives in this partnership focused on the following:

- Integrating software for teaching and learning: Microsoft Word, Microsoft Excel, Microsoft Access, Microsoft PowerPoint, Hyperstudio, Camtasia, Snag It, Adobe CS4 Suite, Audacity, iMovie, and Windows Movie Maker.
- Identifying grade level technology competencies aligned with participants' selected content areas for the course or staff development from the state's standard course of study (e.g., North Carolina Standard Course of Study).
- Addressing social, legal and ethical concepts of technology integration in education: Copyright and fair use, acceptable use policy, digital equity, and assistive

technologies.

- Understanding the pros and cons of emerging technologies in education: wikis, blogs, twitters, flicker, YouTube, and social networking sites.
- Demonstrating how to conduct functional Internet searches aligned with content knowledge.
- Demonstrating how to evaluate software and websites for effective integration.

How the LLI Partnership addressed TPACK—Pedagogical Knowledge

The pedagogical knowledge in this partnership was addressed in the following activities:

- Participation in technology staff development activities (summer 2011) aligned with needs assessments administered fall 2010.
- Participation in technology courses or staff development activities.

The pedagogical knowledge objectives of this partnership focused on how technology is integrated in each content area by addressing the following:

- Understanding theoretical frameworks associated with cognitive, social, and developmental theories of learning and how they relate to technology integration and implications for teaching and learning aligned with different content areas: Project based learning, directed and constructivist models, concepts of instructional design, learning theories, TPACK framework, multiple intelligences, and different integration models.
- Understanding how to create functional content-based technology lesson plans and instructional materials aligned with the basic principles of instructional design models.

How the LLI Partnership addressed TPACK-Content Knowledge

Content knowledge objectives in this partnership were addressed in the following activities:

- Mentoring relationship with content faculty at NCCU and teachers at Hillside New Tech.
- Participation in technology staff development activities (January–June 2012) aligned with content objectives.

The content knowledge focused on how participants create rich technology-based content learning activities aligned with pedagogical knowledge. The following are some aspects that will be addressed:

- Identifying and aligning all activities with a content area curriculum (social studies education, mathematics, language arts, and science education) for a defined grade level, and the technology curriculum for the same grade level as defined in the state's standard course of study curriculum. Participants will align all technology assignments, projects, presentations, and reflections with their content and pedagogical knowledge.

The TPACK integration model in this partnership is also supported by Gardner's (1983) multiple intelligences theory and the constructivist teaching approach.

Describing LLI Partnership Professional Development

Reiman and Peace (2002) have developed a research-based model for professional development for transforming teachers in learning innovative methods and changing their behavior to meet the needs of implementation. According to the researchers, a transformation in teachers occurs over time within an Integrated Teaching–Learning Framework. This framework or model is a blending of two important components: Instructional Repertoire (Joyce and Showers, 1995) and Conditions for Growth and Development, (Sprinthall and Thies–Sprinthall, 1983). The entire model is at the center of the coaching and support provided, as well as the focus of the administrator's institute. In fact, the Framework is an integral part of this project's professional development model. Teacher participants will receive mentoring, coaching, and classroom support, including feedback and guided reflection. According to Joyce and Showers, learning new models of instruction requires: i) introducing the theory/rationale, ii) demonstrating/modeling the new learning, iii) providing opportunities for practice with feedback, and iv) adapting and generalizing the new learning through coaching with feedback. Joyce and Showers (1995) found a significant effect model with respect to student gains in knowledge and skill when all 4 components were employed in staff development training. However, even more significant was their finding

that coaching and feedback were critical to a transfer in training to the classroom practices of the teacher. Reiman and Peace (2002) have also substantiated these findings in their research.

The Conditions for Growth and Development, mentioned previously as a part of the Integrated Teaching–Learning Framework (Sprinthall and Thies–Sprinthall, 1983) include i) taking on a complex new role, ii) guided reflection, iii) balance between the new role and reflection, iv) support and challenge, and v) continuity. Therefore, the Project PT 21st TLM professional growth plan, based on this Framework, incorporates these elements into its three chief components: i) intensive professional development, ii) ongoing professional development; and iii) classroom support (modeling, co-planning, observation, and feedback). The initial intensive training and the ongoing professional development through coursework, mentoring/coaching, and other components of this project provide participants with the opportunity to take on complex new roles in learning/teaching new ways and working in collegial teams, and engage in guided reflection.

Additionally, in this project participants will examine theory/rationale, observe and experience demonstrations, and practice new learning with feedback. Back in their own classrooms, participants will have the opportunity to apply and generalize the new learning. According to Dewey (1910), when teachers are fully engaged in reflective practice they will improve their performance. As teachers reflect on performance, they will develop an essential understanding that will help them increase future performances (Schon, 1987). They will be supported and challenged by monthly reviews of videos and scheduled visits from a clinical supervisor as they implement the ideas they are learning, adapting, and generalizing to their own classrooms. Then, they will have opportunities to engage in planning and focus group discussions in which they further reflect and explore their own growth and that of their students, through ongoing staff development.

The Integrated Teaching–Learning Framework provides a sound basis for this project's model of professional development, through which it is hypothesized that

teachers will gain a sense of their own competence and efficacy and feel cared for in the support of their instructors and colleagues. Teachers need to feel competent and cared for, in order to create classrooms and classroom cultures in which students in turn feel cared for as well as competent. The commitment to providing professional development, course work credit, the beliefs that these teachers will succeed given the appropriate level of support and challenge, and that they do have a large degree of control over their students' ability to experience success with mathematics demonstrates our confidence in them as competent professionals, deserving of intellectual, social, and emotional support from us (as partners) as well as from their peers.

Regardless of content, this transformation in teachers requires, minimally, six months, and typically 1–2 years with ongoing support (Sprinthall, Sprinthall, and Oja, 1998). And the transformation almost always involves a change in teachers' thinking about their own capabilities and power to make things happen. They must believe that their actions can and will have an impact on the academic performance of their students. Furthermore, since high-efficacy teachers are found to work well with their students in a cooperative, rather than in an authoritarian way, and to involve their students in decision making about their own learning (Ashton, 1984), it follows that an increase in self-efficacy of the teachers in this project will lead to a change in their students' locus of control perceptions, i.e., an increase in internality (feelings of more control over what happens to them). The nature of this project is aligned with the transformation addressed this section.

Defining Multiple Intelligences

According to Gardner (1983), intelligence should not be measured as a singular entry, but by multiple entries addressing intelligences possessed by all humans. Gardner (1983) identified eight basic multiple entries or multiple intelligences, which all humans possess in different degrees. These eight basic entries are central to any how students learn with technology, (Bull, 2009). Multiple intelligences concepts will be aligned with technological and content knowledge in the following manner:

- **Linguistics:** Participants will design newsletters, articles,

lesson plans, and learning activities.

- **Logical-mathematical reasoning:** Participants will create Excel spreadsheets with for formulas and a gradebook with the "What If" function.
- **Spatial:** Participants will use digital cameras and camcorders to create images and videos, and used spatial representations in their multimedia presentations.
- **Interpersonal:** Participants will share technology based content materials and activities with participants from the same discipline and the general faculty as a whole.
- **Intrapersonal:** Participants will be encouraged to use video or audio based reflections. Participants will engage in forum discussion via Blackboard.
- **Body Kinesthetic:** Participants will use role play, performance and other delivery options to support this intelligence. Participants will archive information for future presentations.
- **Musical:** Participants will be trained on how to tap musical intelligence to support instruction. Naturalist: Participants will be trained on global perspectives in dealing with concepts.

TPACK and the LLI Partnership Foundations: The Constructivist Theoretical Framework

The constructivist teaching approach also supports TPACK integration at all levels. The constructivist teaching approach is widely used to integrate technology in educational settings. At all levels of education, especially in teacher education programs, there is a paradigm shift in the learning from the traditional style of instruction and learning to students constructing knowledge through project based learning. The goal in using the constructivist teaching approach to integrating technology is to let the learner determine how to integrate technology rather than technology determining the route the learner takes. The constructivist teaching approach makes effective use of students' prior knowledge and cognitive structures based on those experiences and pedagogical knowledge. These preconceived structures [prior knowledge] are valid, invalid or incomplete and students reformulate their existing structures only if new information or experiences are

connected to knowledge already in memory. To integrate new ideas in learning, students must draw inferences, elaborations and relationships between old perceptions and new ideas. Technology integration is a major component of the constructivist teaching approach in teaching and learning in 21st Century education. For technology integration to be meaningful instructors should have their students construct content rich activities related to their fields of study or expertise, rather than creating generic activities.

The focus from the constructivist teaching perspective using the TPACK model for the LLI Partnership addressed the following:

- Related instruction to the technological, pedagogical knowledge, and content knowledge area of each teacher.
- Contextualized instruction in authentic activities aligned with content areas and grade levels.
- Provided teachers with opportunities to collaborate with others from the same discipline as well as with teachers from other disciplines.
- Promoted personal autonomy and control of learning by creating knowledge from prior experiences.
- Promoted personal growth of teachers through designing and creating technology-based activities aligned with their content areas and grade levels.
- Evaluated technology-based products from a perspective and understanding of the effectiveness of each product as it relates to content and grade level objectives.

An Active Model of TPACK Implementation and Integration: The Learning Laboratory Initiative (LLI) Partnership

Designing Instruction for Blended Learning, Online Delivery and a Faculty Mentorship Model to Promote 21st Century Teaching and Learning. Institutional Participants in the Learning Laboratory Initiative Grant: The Faculty of North Carolina Central University and the Faculty of Hillside New Tech High School. The goals of the Learning Laboratory Initiative Grant were initially implemented in 2011 and are currently maintained through an ongoing and active partnership. The goals of the partnership are as follows:

- Develop mentor-teacher teams to promote y

technology (blended learning and online instruction) infused curriculum and instruction in the following content areas: Biology, Chemistry, Mathematics, English, Business and education-related concepts.

- Design an online freshman seminar as a strategy for increasing online technology skills for both teachers and students using content that will support student transitions to high school and to online instruction.
- Train teachers at Hillside NT to analyze, design, develop, implement and evaluate courses designed for blended learning and online delivery modes.

The Grant Implementation Strategy

Phase One: Included a week long summer intensive emersion in collaborative mentoring and technology training that included all grant participants. The mentoring and technology training took place from 8:00 a.m. to 5:00 p.m. each day during the week of June 13th – June 17th, 2011.

Phase Two: Includes an ongoing mentorship between NCCU faculty and Hillside NT faculty to meet the needs of the Hillside NT faculty in their various disciplines and respective classrooms.

The Two NCCU Mentoring & Technology Training Teams

The Mentoring Training Team consisted of Dr. Sharon Spencer (NCCU School of Education, Assistant Dean, and Director of the Teacher Education Program), and Ms. Evalee Parker (NCCU School of Education, Induction Coordinator).

The Technology Training Team consisted of NCCU School of Education faculty that included: Dr. Prince Bull, Associate Professor (Educational Technology Interim Chair and LLI Grant Principal Investigator) – Educational Technology; Dr. James Osler, (Associate Professor Educational Technology and Lead Professor of Online Instructional Design); Ms. Deborah Eaton (School of Education Technology Director and Assessment Coordinator); and Ray Dragon (School of Education Technology Services and Web Designer).

North Carolina Central University Participants: University faculty from the School of Education – Educational Technology and selected STEM Areas in the College of Science and Technology – Biology, Chemistry, and

Mathematics.

Hillside New Tech High Participants: Dr. William Logan, Hillside New Tech High Principal; Hillside New Tech Curriculum Coordinator; and 23 Hillside New Tech Faculty Members.

Phase One: A Week Long Summer Intensive Emersion and Training with Technology Schedule Conducted as a Face to Face and Online Instructional Delivery Training Module

Comprehensive Mentoring and Technology Training took place on June 13–17, 2011 (Training was conducted onsite at Hillside New Tech High School). The in–depth training had both University and High School faculty as participants. Training opened with an intensive Mentor/Mentoring process that involved the University faculty, NT High School faculty, and the Technology Training facilitators. The process allowed for a seamless integration of collegiality that permeated the remainder of the week. This excellent lead off was followed by four days of technology emersion. Technology training started with theoretical frameworks which included Visual Thinking, the TPACK Model, and the Basic Linear Model of Instructional Design. This introduction provided participants with methods that addressed how they could infuse technology into curriculum. The introduction to technology in this manner was greatly appreciated and fueled the remainder of the week of technology training. The participants earned a total of 35 hours which were equivalent to 3.5 Continuing Education Units in Online Teaching. Comments by participants (as Phase One Outcomes) follow the training schedule that is provided. The in–depth week long schedule of the training consisted of the following schedule displayed in [Figure 3].

An Online Blackboard Portal was created developed, maintained, by NCCU (Osler serving as moderator). This online tool was (and is currently) provided by the University Course Management System to upload participants work, communicate, and share information. The purpose of the NCCU & Hillside NT High LLI Partnership Online Portal is to provide a comprehensive online resource to support the grant partners, disseminate relevant technology–related outcomes (and related literature), and share outcomes and projects. A screenshot of the online portal is displayed in [Figure 4].

LLI Partnership Results

The following are comments by Hillside NT Participants that took place in the week of LLI Partnership Technology Training. The comments are from administrators, presenters, and participants is displayed in [Figure 5].

LLI Partnership Research Questions (provided to give clarity regarding the over goals and objectives of the LLI Partnership):

The partnership was guided by the following questions:

- What is the impact of designing the Freshman Seminar course for online delivery or blended learning on students' performance?
- How effective was the content faculty/teacher mentor relationship on teachers' productivity in developing blending learning and online instruction?
- What are the perceptions of teachers towards blended learning, and online instruction?
- What are the impacts of faculty mentors on classroom instruction and students' performance?

Results

Partnership Evaluation and Feedback

Evaluation of the partnership was multi–faceted. It includes the effectiveness of the professional development activities/courses, instructors/trainers, the impact on administrators, mentor/mentee relationship and most significantly, the impact on participant teachers, teacher mentees and students. For each training component, participants will evaluate the professional development activities (including workshops, courses, coaching sessions, and feedback sessions) for perceived benefits, goals met, and instructor/trainer effectiveness. Evaluation will begin at the end of spring 2011, summer 2011, fall 2011, spring 2012, and end in summer 2012. The table that follows aligns the goals with evaluation tools for determining the impact of the School of Education partnership with Hillside New Tech High on teachers, students and administrators at Hillside New Tech High School. [Figure 7]. Provides a table of the LLI Partnership Goals:

Using both face–to–face and teleconference options, regular meetings were scheduled to ensure that all stakeholders are in agreement that activities are planned

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| Time: | June 13th | June 14th | June 15th | June 16th | June 17th |
|-------------------|--|--|---|---|--|
| 8:30–12:00 | <p>Welcome and Introductions</p> <p>Mentor/Mentoring Relationship: A Partnership between NCCU faculty & Hillside NT teachers</p> <p>Presenter Dr. Sharon Spencer Ms. Evalée Parker</p> | <p>Instructional Design: Learning to Use the ADDIE Model to Construct Technology Tools for Instruction, Visual Thinking and the TPACK Model: How it can be Implemented to Design Multimedia, Using the Flip Camera in Teaching: Flip Camera Use and pictures and review of Blackboard Accounts</p> <p>Presenters Ms. Deborah Eaton Dr. James Osler Dr. Prince Bull</p> | <p>Presentation: Multiple Intelligences (Survey Completed) Camtasia: Developing Content for Teaching Second Life (Demo and Account Creation)</p> <p>Presenters Ms. Deborah Eaton Dr. James Osler Dr. Prince Bull Hillside NT Teachers</p> | <p>Teaching with Edmodo, Wizzio, and Diigo: Blended Learning (Synchronous Teaching and Asynchronous Teaching and Learning): Integrate Camtasia files Presentation: CourseSites by Blackboard</p> <p>Presenters Ms. Deborah Eaton Dr. James Osler Dr. Prince Bull Hillside NT Teachers</p> | <p>Teaching with Blackboard: Blended Learning (Synchronous Teaching and Asynchronous Teaching and Learning): Integrate Camtasia files</p> <p>Presenters Ms. Deborah Eaton Dr. James Osler Hillside NT Teachers</p> |
| 12:00 – 1:00 p.m. | Lunch (on your own) | | | | |
| 1:15 – 3:00 | <p>Overview of Online Teaching and Learning Theoretical underpinnings</p> <p>Instructional Design (Introduction)</p> <p>TPACK Model Overview: Teaching Using Blended Learning Approach</p> | <p>Introduction to Camtasia: Designing Instruction Using Camtasia</p> | <p>Second Life Experimentation in the 3D Virtual Environment Camtasia: Developing Content for Teaching</p> | <p>SAS ® Curriculum Pathways © (Demo) Teaching with Elluminate: Blended Learning (Synchronous Teaching and Asynchronous Teaching and Learning): Integrate Camtasia files</p> | <p>Bringing It All Together: Developing Content for Blended Learning: Presentations by Teachers at Hillside NT</p> |
| 3:30 – 4:30 p.m. | <p>Presenters Dr. Prince Bull Dr. James Osler Ms. Eaton</p> <p>Faculty & Teachers Team Building Review, closure and evaluation</p> | <p>Presenters Dr. Prince Bull Dr. James Osler Ms. Eaton</p> <p>Show and Tell – Product Presentations Faculty & Teachers Team Building, Email and Blackboard Course Shell Data Uploading and Forum Completion</p> | <p>Presenters Dr. Prince Bull Dr. James Osler Ms. Eaton</p> <p>Show and Tell –Product Presentations Faculty & Teachers Team Building, Email and Blackboard Course Shell Data Uploading and Forum Completion</p> | <p>Presenters Ms. Deborah Eaton Dr. James Osler Dr. Prince Bull Mr. Ralph P. Moore (SAS ®)</p> <p>Show and Tell – Product Presentations Faculty & Teachers Team Building, Email and Blackboard Course Shell Data Uploading and Forum Completion</p> | <p>Presenters: Hillside NT Teachers</p> <p>Email and Blackboard Course Shell Data Uploading and Forum Completion, Open Forum and Discussion</p> |
| 4:30 p.m. | Dismissal | Review, Closure & Evaluation | Review, Closure & Evaluation | Review, Closure & Evaluation | All Participants Final Evaluation (Likes and Areas for Improvement) |

Figure 3. Schedule of LLI Hillside NT Faculty Training

Figure 4. The LLI NCCU & Hillside NT Partnership Portal

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| Participant | Institution | Comment |
|-------------------|-------------|---|
| Austin Hogan | Hillside NT | I would like to thank you all for taking time to work with Hillside New Tech High School. Many times we attend workshops to which we leave wondering when or how to apply the skills. This however has been the most rewarding workshop because these skills can immediately put to use. Teachers have already developed presentations for the upcoming school year and to use as a resource for differentiating instruction (not to mention that it's just fun). Thank you for your support in placing Hillside New Tech on top of the current trends in educational technology. |
| William Logan | Hillside NT | I am so impressed with the video presentations that I have been able to see thus far! So impressed that I will be requiring all participants to utilize this tool in a future project next year or as a communication tool for your parents and students. What a great way to use technology to enhance instruction and communication! Way to go New Tech!!! |
| Prince Bull | NCCU SOE | Dr. Logan, I must concur that New Tech has an excellent technology driven staff. All we did (NCCU team) was to introduce the program, demonstrate and provide a brief overview of the technology and New Tech teachers were ready to design. This is the best technology group that I have presented to. They are quick to generalize concepts, creative, innovative, and willing to explore on their own by aligning their experiences with their content. I have no doubt that New Tech teachers will far exceed our expectations in using this tool. I am glad that I am part of this unique program to transform 21st century teaching and learning at New Tech. I look forward to 2011/12 academic to watch New Tech students learn using an innovative tool. The credit goes to your staff. Thank you for giving us the opportunity to work with New Tech teachers. |
| Demetrius Haddock | Hillside NT | Dr. Osler, Here is my email address. We spoke briefly about setting up a Blackboard account for New Tech teachers so we can utilize it for our classes. Also, since I have used blackboard in the past. I can teach the other teachers how to set up and maintain their classes. They all learn quickly anyway, so they will do much more on their own than I could ever show them. |
| Deborah Eaton | NCCU SOE | Dr. Bull, I certainly agree that this is a great group of hard working technology competent teachers! It's quite amazing to see what they have accomplished and produced in just 3 days! |
| Ralph Moore | SAS® | James, Thanks so much for giving us the opportunity to work with the outstanding staff at Hillside New Tech. I hope that the teachers had as much fun during the session as I did. We look forward to continuing to assist you in this project, as well as following up on the ideas for working with your teacher training programs at Central. If there's anything we can do to assist you or your colleagues as you move forward, please let us know. |
| DPS Smalls | | Good Evening Drs. Bull/Osler and Ms. Eaton, I concur with Mr. Hogan concerning ease of use, applicability of skills, and the fun factor. This training has me excited about tools that I can develop specifically for counseling to help students and parents. Often trainings are geared towards the core content areas leaving the support services to fend for themselves. That is certainly not the case here. I look forward to working with the technological hardware and software that has been provided. They will definitely help me to improve my accessibility to those I serve. Dr. Logan, On a side note, I do not think that you will have any opposition to your charge to utilize the afforded tools in the upcoming school year. |

Figure 5. Table of Phase One: Qualitative Outcomes

| LLI Goal | Outcome |
|--|---|
| 1. Develop mentor-teacher teams to promote technology (blended learning and online instruction) infused curriculum and instruction in the following content areas: Biology, Chemistry, Mathematics, English, Business and education-related concepts | Technology and software (such as Blackboard Collaborate/Elluminate Live) was provided to aid in online course offerings and face to face classroom teaching. Hillside faculty used Camtasia and recorded video files (with their technology training) to support their courses and teaching methods. |
| 2. Train teachers at Hillside NT to analyze, design, develop, implement and evaluate courses designed for blended learning and online delivery modes. | University faculty worked as mentors to Hillside NT faculty in the STEM areas and the Hillside NT Freshman Seminar course. |
| 3. Design an online freshman seminar as a strategy for increasing online technology skills for both teachers and students using content that will support student transitions to high school and to online instruction. (In addition, Report Findings and Outcomes of the LLI Partnership) | The Freshman Seminar course was enhanced by Hillside NT faculty through the use of technology. A collaborative research publication was created by NCCU and Hillside NT faculty members. The article was submitted and accepted at a national technology conference. The final report on the grant was submitted in March of 2011. The grant reviewers were very impressed with the partnership facilitation methodology and the technology-based outcomes. As a result, sustainable and supplemental funding for further continuance of the partnership was awarded and the partnership will continue into the 2012 academic year. |

Figure 6. Table of Phase Two: Outcomes

according to the calendar of the school system and with consideration of other state, regional, and local activities. Throughout the project regular conversations will be necessary to assure alignment of courses and professional development activities with curriculum pacing guides and the needs of the teachers. Initial planning meetings worked through the integrated design of the entire program (including content, pedagogy and technology modes of delivery), and to confirm logistics and ensure continuity for the courses, summer institute, and support through

classroom coaching, as well as the administrators institutes. This co-planning focused on the continuous collection of qualitative data that is now used in the supplemental funding of the next round of the grant. The LLI Partnership between the NCCU School of Education and Hillside New Tech provides a new model for technology integration that brings out the best in faculty of each respective institution. This is the type of dynamic collaboration that is the framework that will guide 21st Century teaching and learning. The additional funding is evidence that the model

| Goal | Evaluation Tool |
|---|---|
| Increase the number of courses and electives delivered online or through blended learning | Track courses designed and delivered through the partnership |
| Design and develop the freshman seminar course for online and blended learning delivery modes. | Implement a freshman seminar course online or through blended learning. Measure students' performance in the online, blended learning and traditional settings. |
| Teachers develop course content for blended learning or online delivery. | Number of course developed as online or blended learning. Perceptions of teachers towards blended learning and online delivery modes. |
| Teachers will demonstrate a notable change in self-efficacy regarding what they "can do" to impact student learning using technology and increased content knowledge. | Pre and post surveys; Video and written reflections (Blackboard and Elluminate); work products. |
| Participants will demonstrate at least a 10% increase in their class EOC pass rate on the State tests. | Pre (2010 benchmark) and post (End-of- Course State 2011 scores) test results of students of participants; |

Figure 7. Table of the LLI Grant Partnership Goals

is appreciated by the governmental agencies who value the collaborative efforts of K-12 and higher education faculty. It is these types of dynamic collaborative efforts that will produce new models of teaching coupled with specialized learning tools and contextual instructional strategies that will re-shape education both now and in years to come.

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